

***Niviventerrema yunnanensis* gen. n., sp. n.
(Lecithodendriidae: Pleurogenetinae), from
Niviventer cremoriventer (Muridae) from Yunnan
Province of the Peoples Republic of China**

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ABSTRACT: During a study of helminths of mammals from Yunnan Province, southern China, 2 of 6 specimens of *Niviventer cremoriventer* (Muridae) were infected with a total of 42 specimens of an undescribed species of Lecithodendriidae (Pleurogenetinae) representing a new genus. *Niviventerrema yunnanensis* gen. n., sp. n., is most similar to *Indopleurogenes orientalis* (Pleurogenetinae) from *Rana cyanophlyctis* but differs in having an esophagus; ceca that are half long, ending immediately posterior to the testes; and a genital pore opening at level of pharynx; and in lacking a metraterm. *Niviventerrema yunnanensis* is described as the only known species in the new genus.

KEY WORDS: *Niviventerrema yunnanensis*, Lecithodendriidae, Pleurogenetinae, China, *Niviventer cremoriventer*, Muridae.

Of Lecithodendriidae (Lühe, 1901) Odhner, 1910, the subfamilies Allassogonoporinae Skarbilovich, 1943, Cephalophallinae Yamaguti, 1958, Gyrobascinae Macy, 1935, Posterocirrinae Yamaguti, 1971, Lecithodendriinae Looss, 1902, Leyogoniminae Dollfus, 1951, Odeningotrematinae Rohde, 1962, Pleurogenetinae Looss, 1899 (syn. Pleurogeninae Travassos, 1921), Phaneropsolinae Mehra, 1935, Prosthodendriinae Yamaguti, 1958, and Matoviinae Mas-Coma, Roset, and Mantoliu, 1985, contain species previously reported from nonchiropteran mammals. *Cephalotrema minutum* Baer, 1943, from *Neomys* sp. and *Sorex* sp. was originally assigned to the Pleurogenetinae but was placed in the Prosthogonimidae Nicoll, 1924, by Yamaguti (1971). Combes and Jourdan (1969) supported the assignment of *C. minutum* by Baer (1943) and recommended the placement of both *Cephalotrema* and *Pseudocephalotrema* Combes and Jourdan, 1969, in the Pleurogenetinae of Lecithodendriidae. Additional studies by Baysade-Dufour and Jourdan (1976) and Jourdan (1977) support this placement of *C. minutum*.

During a study of the helminths of mammals from the Yunnan Province of the Peoples Republic of China, an undescribed species of Lecithodendriidae representing a new genus of the subfamily Pleurogenetinae was found.

Materials and Methods

Six specimens of pencil-tailed rat, *Niviventer cremoriventer* Miller, 1900, were collected in August 1987 from Menglun, Yunnan Province, Peoples Republic of China, and examined for helminths. Trematodes were fixed in hot AFA under slight coverslip pressure, stained in Semichon's carmine, and mounted in Canada balsam or Kleermount. Specimens were sectioned by conventional paraffin technique. Measurements are in micrometers with the mean followed by the range in parentheses, unless otherwise stated. The following specimens from the USNM Helminthological Collection were examined: *Allassogonoporus marginalis* (No. 9194), *A. vespertilionis* (No. 36672), *Myotitrema asymmetricum* (No. 36673), *Pleurogenes bicolor* (No. 32876), *P. clavigerum* (No. 50468), *P. cystolobatus* (No. 59628), and *P. loossi* (No. 29746).

Results

Two of 6 specimens (33%) of *N. cremoriventer* (Muridae) were infected with 42 specimens of *Niviventerrema yunnanensis* gen. n., sp. n. (Lecithodendriidae: Pleurogenetinae).

Niviventerrema gen. n.

DIAGNOSIS: Lecithodendriidae; Pleurogenetinae. Body spinose. Oral sucker subterminal. Aetabulum preequatorial, approximately same size as oral sucker. Prepharynx short, pharynx smaller than oral sucker, esophagus moderately long, ceca half long. Testes opposite, equatorial. Cirrus

sac preacetabular, enclosing cirrus, prostate complex, and seminal vesicle. Genital pore marginal, sinistral, opening in upper half of forebody. Ovary dextral, immediately pretesticular. Seminal receptacle spherical, intertesticular. Laurer's canal present. Vitelline follicles in two symmetrical groups largely in forebody. Uterus primarily posttesticular. Eggs operculate. Excretory vesicle Y-shaped.

TYPE SPECIES: *Niviventerrema yunnanensis* sp. n.

Niviventerrema yunnanensis sp. n.

(Figs. 1–3)

DESCRIPTION (based on 20 adult specimens): With characteristics of genus. Body elongate, 1,350 (1,228–1,485) long by 510 (420–610) wide. Forebody 366 (320–436) long, densely spined. Oral sucker spherical, 118 (105–135) long by 117 (105–130) wide. Acetabulum 122 (112–133) long by 120 (105–135) wide. Ratio of transverse diameter of oral sucker to acetabulum, 1:1.03. Prepharynx 13 (5–23) long; pharynx 58 (50–69) long by 56 (51–64) wide; esophagus 53 (26–71) long, bifurcating midway between oral sucker and acetabulum; ceca terminating midway between acetabulum and posterior extremity of body. Testes large, smooth, opposite, near midbody. Right testis 235 (180–386) long by 218 (190–265) wide; left testis 230 (170–286) long by 210 (180–245) wide. Seminal vesicle coiled, enclosed in cirrus sac, 302 (235–395) long by 70 (49–101) wide, largely preacetabular, occasionally overlapping anterior margin of acetabulum. Genital pore marginal, sinistral, opening at level of pharynx. Ovary dextral, with 3–5 lobes, 165 (102–230) long by 175 (120–235) wide, immediately pretesticular. Seminal receptacle small, 43 (30–56) long by 49 (40–63) wide, located in intertesticular region, near level of anterior margins of testes. Ootype immediately left of seminal receptacle. Vitellaria follicular, in 2 symmetrical masses, located in lateral fields between level of pharynx and anterior margins of testes, becoming almost a continuous band across forebody in larger specimens. Uterus filling most of posttesticular region of hindbody. Eggs 24 (22–26) long by 10 (7–13) wide. Excretory pore terminal, excretory vesicle long-stemmed, branches extending halfway to testes from posterior extremity.

Taxonomic summary

SPECIMENS DEPOSITED: Holotype USNM Helm. Coll. No. 83562; paratypes USNM Helm.

Coll. No. 83563 (5 specimens), Texas Cooperative Wildlife Coll. Ch 87–31 (5 specimens), Texas A&M University, and the University of Nebraska State Museum, HWML 37261 (5 specimens).

TYPE HOST: *Niviventer cremoriventer*.

SITE OF INFECTION: Small intestine.

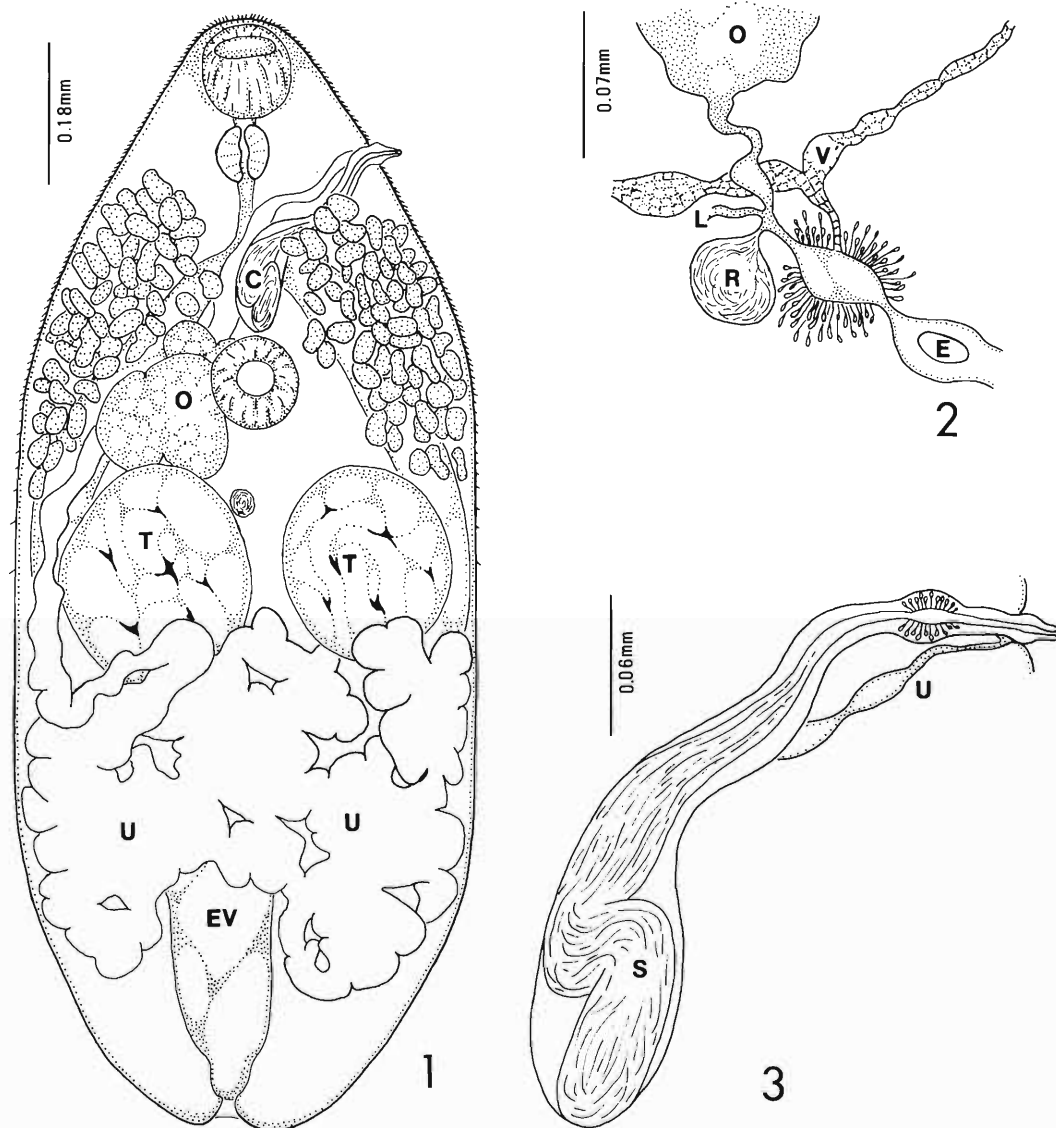
TYPE LOCALITY: Menglun, Yunnan Province, Peoples Republic of China, 21°55'N, 101°17'E.

ETYMOLOGY: The genus designation is taken from the genus of the host, *Niviventer*. The specific designation refers to the province of China where the new species was collected.

Discussion

Species of *Maxbraunium* Caballero and Zerecero, 1942 (Maxbrauniinae), and *Cephalotrema* Baer, 1943 (Pleurogenetinae), are the only lecitodendriids previously reported from mammals that are similar to *N. yunnanensis* in having vitelline follicles distributed in forebody from level of cirrus pouch to level of anterior margins of testes, ceca extending posteriorly beyond postacetabular testes, and a preacetabular cirrus pouch. The new species is most similar to species of *Pleurogenes* Looss, 1896, and *Indopleurogenes* Yamaguti, 1971, in having a similar distribution of vitelline follicles in forebody; symmetrical, postacetabular testes; a preacetabular cirrus pouch enclosing the seminal vesicle, prostate complex and cirrus; the genital pore opening marginally in forebody; a uterus that is mostly confined to hindbody; ceca that extend into hindbody; and a blind seminal receptacle. Srivastava (1934) described *Pleurogenes orientalis* from *Rana cyanophlyctis* in India. Yamaguti (1971) placed this species in the genus *Indopleurogenes* based on the absence of an esophagus, the tendency of vitellaria to overlap ceca, the postacetabular placement of the testes, and placement of the genital pore at level of oral sucker. *Niviventerrema yunnanensis* is more like *Indopleurogenes orientalis* (Srivastava, 1934), the only species in the genus, than species of *Pleurogenes* in having half-long ceca.

Niviventerrema yunnanensis differs from species of *Maxbraunium* and *Cephalotrema* in having an esophagus, a marginal rather than submedian genital pore, and a Y-shaped rather than V-shaped excretory vesicle. The new species differs from both *I. orientalis* and remaining species of *Pleurogenes* in having ceca that terminate immediately posterior to testes, instead of immediately anterior to testes (*I. orientalis*), or near



Figures 1-3. *Niviventerrema yunnanensis* gen. n., sp. n., from *Niviventer cremoriventer*. 1. Camera lucida drawing of adult, ventral view showing cirrus apparatus (C), uterus (U), ovary (O), testis (T), and excretory vesicle (EV). 2. Composite drawing of ootype region showing ovary (O), seminal receptacle (R), Laurer's canal (L), vitelline reservoir (V), and an egg in the uterus (E). 3. Composite drawing of genital atrium region showing seminal vesicle (S), and uterus (U).

posterior extremity (*Pleurogenes* spp.), and a genital pore that opens at level of pharynx, instead of oral sucker (*I. orientalis*), or posterior to the cecal bifurcation (*Pleurogenes* spp.); and the new species lacks a metraterm. *Niviventerrema yunnanensis* is established as the only known species in the new genus.

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